

ABSTRACT OF THE DISCLOSURE

A spatial filter adapted to increase the angular spread of non-conjugated energy in a beam and suppress this energy to improve the efficiency of a phase conjugate system. In the illustrative embodiment, the filter includes first and second lenses and an aberrator to increase the angular spread. In the specific embodiment, an opaque plate, with a pinhole aperture therethrough, is sandwiched between the lenses to suppress the non-conjugated energy. The aberrator may be implemented with an amplifier or other suitable mechanism. Likewise, the aperture may be replaced with a highly angle-selective thick Bragg grating or other suitable arrangement. A phase conjugate master oscillator/power amplifier laser architecture is also disclosed. In an illustrative embodiment, the novel architecture includes a master oscillator adapted to output a laser beam; a power amplifier beam line in optical alignment with the beam; a mechanism for creating a beam having phase conjugate energy and non-conjugated energy; and at least one inventive spatial filter in alignment with the amplifier. The inventive filter is adapted to increase the angular spread of non-conjugated energy in a beam and suppress this energy to improve the efficiency of the system. In a specific implementation, the beamline includes plural amplifiers, each with one of the novel spatial filters disposed therebetween.